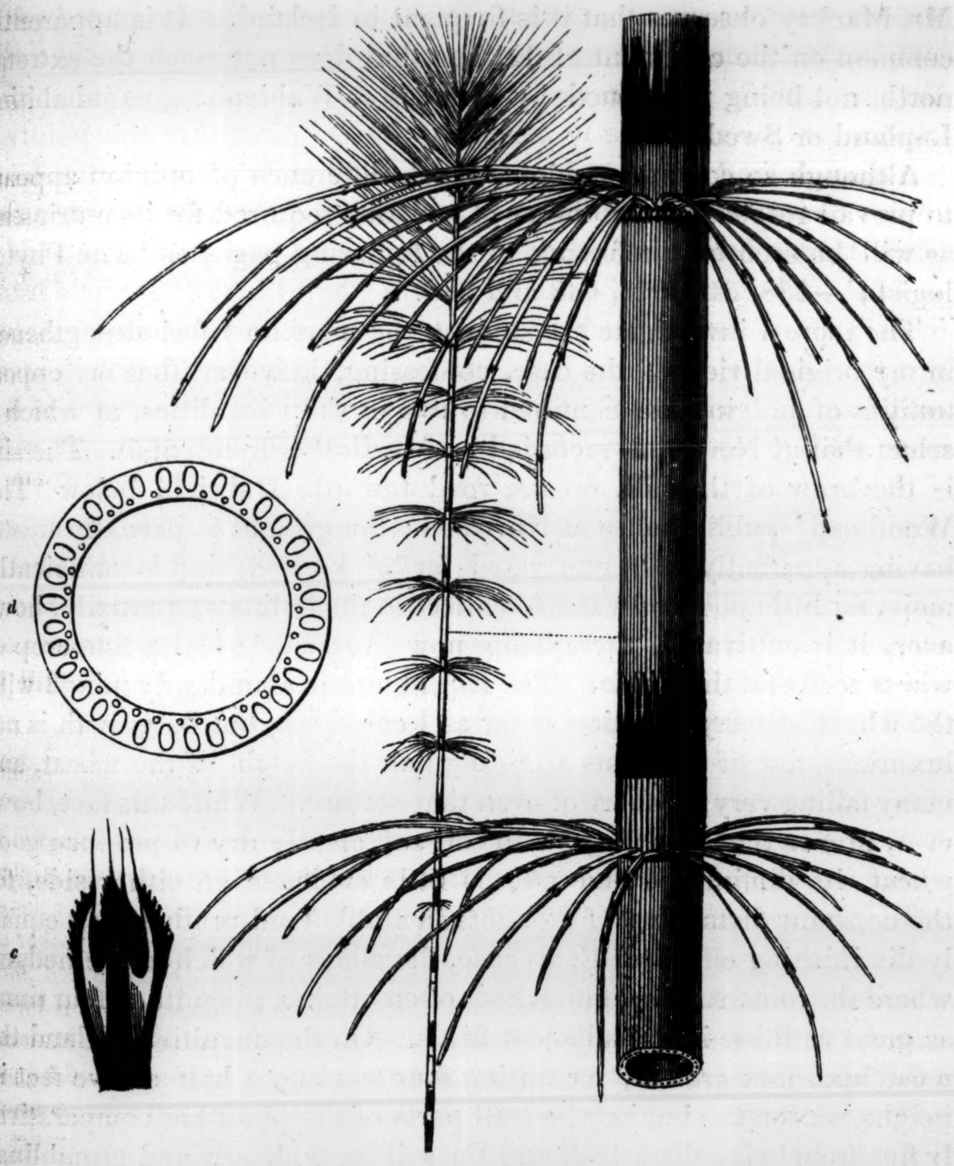
THE PHYTOLOGIST.

ART. CLXVII. — *A History of the British Equiseta.* By EDWARD NEWMAN. (Continued from p. 700).



a, Diagram of a barren stem. *b*, Portion of ditto, natural size. *c*, One of the sheaths of the branches. *d*, Section of stem.

GREAT EQUISETUM.

EQUISETUM TELMATEIA, *Ehrhart*.
Equisetum fluviatile, Smith, Hooker, Babington.

THIS beautiful species occurs in almost every county of England, but more abundantly in the neighbourhood of London than in other localities. Hampstead Heath and the neighbouring woods afford several well-known stations; it occurs also in Scotland and Wales, and Mr. Mackay observes that it is frequent in Ireland. It is apparently common on the continent of Europe, but does not reach the extreme north, not being mentioned by Linneus or Wahlenberg as inhabiting Lapland or Sweden.

Although so common a plant, much difference of opinion appears to prevail respecting the degree of moisture required for its nutriment, as will be seen by a reference to the following pages of 'The Phytologist;'—588, 618, 621, 648 and 649.

The more I investigate the subject, the more do I feel strengthened in my original view of the case, confessing, however, that my opportunities of judging are confined to two or three localities, of which I select that at Norwood, recorded by Mr. Ilott (Phytol. 295). The site is the brow of the hill, on the road towards Dulwich, below 'The Woodman' public-house at Norwood; the ground is partially waste, having apparently been excavated for brick-earth, and is sufficiently moist for little pools of water to collect in the hollows; partially, however, it is cultivated, there being now (August, 1843), a fine crop of wheat ready for the sickle. The Equisetum is abundantly mixed with the wheat in every direction as far as I could see, but its growth is not luxuriant, few of its stems attaining half the height of the wheat, and many falling very far short of even that stature. While this fact, however, proves that it will grow in soil sufficiently dry to produce good wheat, its diminished size affords little evidence on either side, for the constant disturbing of the roots in arable land produces an equally diminishing effect on E. arvense, the stems of which in the hedges, where the roots remain untouched, often attain a magnitude four times as great as those in the adjacent fields. On the uncultivated land the most luxuriant growth, measuring four feet and a half or five feet in height, was on the banks where all parts of the plant are comparatively free from being disturbed, and the soil loose, loamy and crumbling; but the approach to the little pools, as well as to exposed, dry, and trodden parts, was marked by a gradual decrease in the size of the plants, until, in the immediate vicinity of the water and trodden paths, the stems were perfect pigmies, scarcely four inches in height, thus inducing the conclusion that, in this locality, water is prejudicial, if not fatal, to the existence of the plant, and that closeness and compactness of soil is also unfavorable; a more extensive record of observation is still to be desired.

It is hinted by Haller that the Roman people ate this plant, but the passage is so brief as to throw little light on the subject.*

Considerable difference of opinion appears to prevail on the subject of its being eaten by animals. Mr. Watson, in one of the passages above referred to, states that horses graze on it, (Phytol. 588). Mr. Gibson says that horses will not eat the plant at all, if they can get anything else, (Id. 618). On the occasion of my first visit to the Norwood station, there were three half-starved cadger's horses upon the waste ground where the Equisetum is growing; they devoured eagerly the coarse sour herbage growing about the pond, and almost every green blade they could find; indeed it seemed as though they seldom had an opportunity of making a meal, but they pertinaciously refused to touch the Equisetum.

The representations of this plant generally fail to give a correct idea of its figure, from the circumstance that the summit only of the stem is given; in other respects those in 'English Botany,'† Bolton's Filices'‡ and Dietrich's 'Cryptogamia of Germany,'§ are tolerably correct.

It has already been shown that the nomenclature of this species is somewhat confused, but I trust that botanists generally will agree with me in restoring the earliest (binominal) name. There is little doubt of its being the Equisetum majus of Ray‖ and of Gerarde,¶ but not the E. arvense var. β. of Hudson,** the Equisetum Telmateia of Ehrhart,†† the Equisetum eburneum of Roth,‡‡ who himself acknowledges it to be Ehrhart's E. Telmateia; and, finally, the Equisetum fluviatile of Smith, Hooker, and Babington, and of many continental botanists. It also appears clear that it was totally unknown to Linneus, and, consequently, neither named nor alluded to in any of his works. The names given by Ray, Gerarde, and other authors antecedent to Linneus, are dropped by universal consent: that the plant in question is a variety of E. arvense will not now be maintained; so that we unavoidably arrive at Ehrhart's name of Telmateia, published fifty-five years ago. Ehrhart's names were never, I believe, intended by their author as specific names, and, moreover, have been rejected as fanciful by many of our later botanists; but the latter objection scarcely holds good in any instance, and certainly not in the present, for the Greek word τελματειος, signifying 'growing in mud,' is less fanciful, as applied to the present species, than the Latin word *fluviatile*, or 'growing in rivers.' Moreover, the former objection is overruled in the present instance, by Ehrhart's name having been employed in the 'Flora Danica,'* a work of acknowledged authority, and recently by Dietrich, as quoted above. I may also add that it is received as authority by Wahlenberg, than whom we have no more careful or pains-taking nomenclaturist.

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* Hoc fuerit Equisetum quod a plebe Romana in cibum recipitur. — Hall. Hist. iii. 1, No. 1675.

† Eng. Bot. 2022.

‡ Bolt. Fil. tab. 36 and 37.

§ Deut. Krypt. Gew. pl. 5.

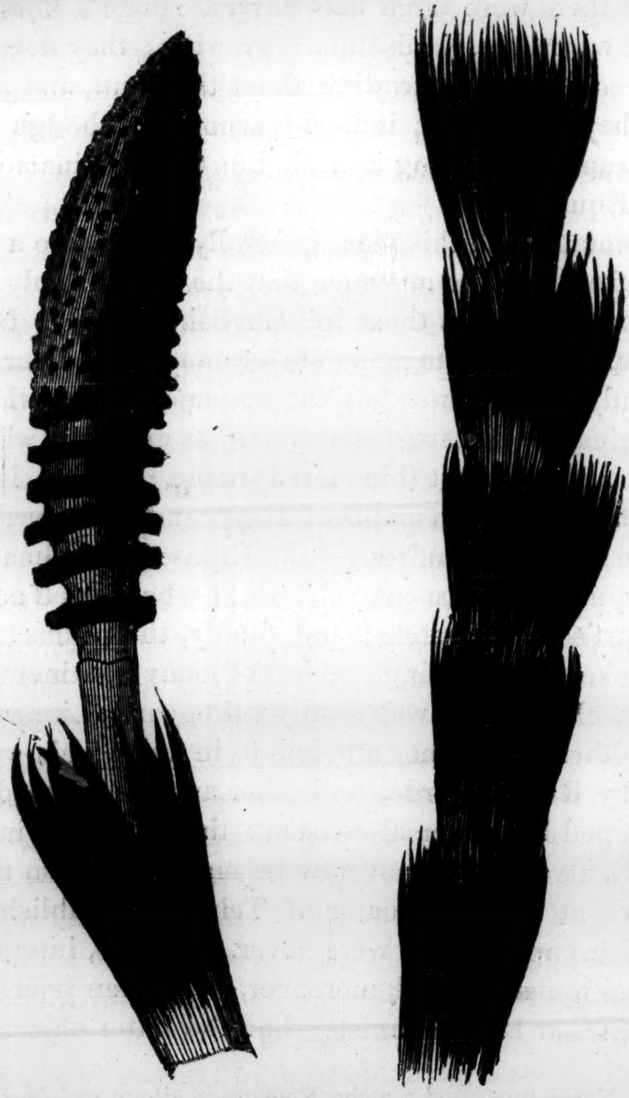
‖ Ray, Syn. 130.

¶ Ger. Em. 1113.

** As suggested by Mr. Watson.

†† Ehrh. Beitrage, ii. 159.

‡‡ Roth, Catal. i. 129.



Fertile stem of Equisetum Telmateia.

The roots and rhizoma present no peculiar characters; the latter is generally of an ebony blackness, and seems to spread with considerable rapidity, so that when once introduced a large patch is soon formed.

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* Flora Danica, 1469.

The stems are of three kinds, as in the preceding species; *first*, bearing fructification only; *secondly*, bearing both fructification and branches; and *thirdly*, bearing branches only. The exclusively fertile stems come up in March, shed their seed in April, and disappear in May: the figure on the opposite page represents a fertile stem of the natural size and proportions, but divided for more convenient representation: it is nine inches in length, and has six joints, several shorter and subterranean ones having served to unite it with the rhizoma. I have, in some instances, found the total number of joints to be fifteen; the stem, scarcely observable, owing to the great length of the sheaths, is pale brown, smooth and succulent. The sheaths are very large, loose and spreading towards the summit, distinctly striated, and terminate in from thirty to forty long, slightly flexuous, setiform teeth; the sheaths at the base are pale brown, but are much darker towards the summit. The catkin is about two inches and a half in length, and at length an inch and a half in circumference: the scales are very numerous, often reaching four hundred in number; they are arranged in whorls, of which the lower ones are always sufficiently obvious.

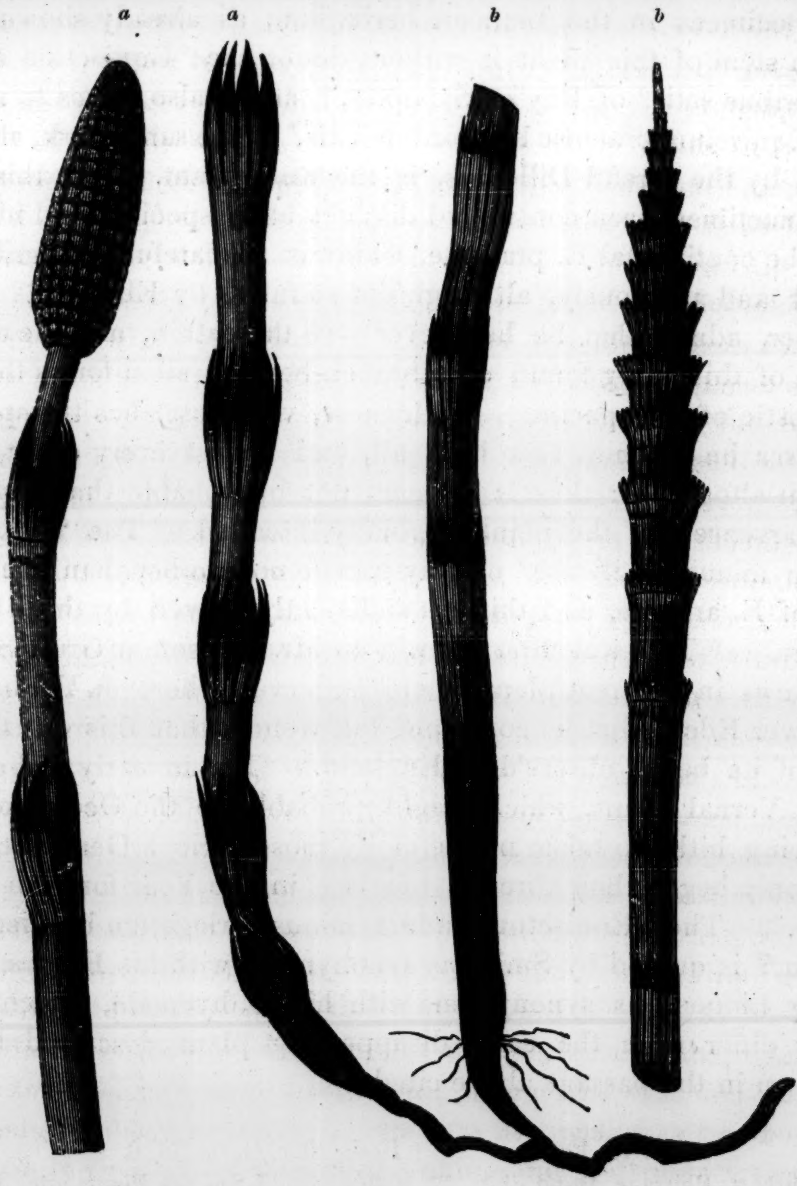
When the stem bears both fructification and branches, it is seldom in perfection until the month of August: such stems are far less numerous than in either of the preceding species, and bear but a small proportion to those which are exclusively fertile or exclusively barren: the catkin is much smaller than under ordinary circumstances: the stem also is smaller, although having longer joints; the sheaths are shorter, less spreading, and of a pale green colour; the branches are placed on the second to the ninth or tenth joint, counting from the catkin; in all the specimens I have seen they are ascending.

The barren stem is much larger than in any other species of Equisetum with which I am acquainted: it occasionally attains a height of seven feet, and a circumference of more than two inches; its outline and proportions are shown, on a very reduced scale, at page 721, fig. *a*, and one of the internodes, with its accompanying sheaths, is represented of the natural size at fig. *b*.

The following is the description of a living stem now before me, of the average size. The entire length above ground, and including the ascending branches, is fifty-four inches; the circumference, at twelve inches from the ground, is an inch and a half, but decreases upwards until it becomes extremely slender, terminating almost in a point.

The surface of the stem is perfectly without ridges or furrows; the number of joints is forty: the colour of the internodes is white, with the slightest tinge of green, but those on the lower part of the stem often change to intense black: the black makes its first appearance in spots or blotches, giving the stem a singularly variegated appearance, but it rapidly spreads, and finally entirely occupies all the lower internodes. The sheaths, at the stouter part of the stem, are fully half an inch in length, and the teeth are as much more: the former have about thirty-two deep and distinct striæ, which are furnished with rows of siliceous particles at their edges: the spaces between the striæ have broad shallow furrows. The teeth are slender, setiform, closely appressed to the stem, frequently adhering at the summit in twos and threes, and furnished with dilated, semi-membranous, somewhat ragged edges at the base. The sheaths are pale green, with a distinct blackish ring at the summit; the teeth are black, with the membranous edges brown, and, in the lower sheaths, often clothed with a brown, byssoid pubescence. Each of the joints, with the exception of five forming a slender apiculus at the summit, and six nearest the ground, is furnished at the base of its accompanying sheath with a whorl of slender branches: those of the lower sheaths are short and recurved, while those near the summit are nine inches in length, and nearly erect: the varied direction of the branches is shown at fig. *a*. The number of branches in a whorl is very various: the respective numbers, counting from the summit, are these: — five, six, seven, eight, nine, ten, thirteen, fourteen, fifteen, sixteen, eighteen, twenty, twenty-five, twenty-nine, thirty-three — repeated eleven times, thirty, twenty-eight, and sixteen, making a total of six hundred and seventy-eight. The colour of the branches is a delicate green, so beautiful as to attract the eye at a considerable distance. Each of these branches is composed of about eight or nine longish joints, and each joint terminates in a loose sheath: the branches have either eight or ten ribs, united in pairs, and rough with siliceous particles: the sheaths terminate in four or five teeth, each furnished at the extremity with a slender black bristle: a pair of ribs ascends into each of the teeth, and each rib is furnished, near its termination, with a series of rather long siliceous points, which give it a pectinated appearance. Such may be received as the description of a stem of normal size and characters, and the variations are very unimportant, chiefly consisting in size and number of branches, but rarely interfering with the figure of the frond, unless caused by circumstances, either of wet or drought, both apparently uncongenial to its perfect development. One character, however, must not be passed over in silence, and that is, the liability of the branches to emit two, three, four, or even five, secondary branches, from the summit of the second joint: these branches are usually slender, and when present, they give the plant a beautifully compound and feathery appearance.

The stem presents a transverse section very different from that of any other species (fig. *d*).



THE CORN-FIELD EQUISETUM.

EQUISETUM ARVENSE, *Linneus*.

This is, beyond all comparison, the most abundant of our British Equisetums; indeed it is a serious nuisance to the farmer and gardener, whose utmost efforts to eradicate it frequently prove ineffectual. It appears to have little choice of locality, being equally common in dry and moist situations.

The name of this species is now universally received, and I am not aware that any doubt exists as to its being the Equisetum arvense of Linneus, although there is some confusion in the nomenclature of the specimens in the Linnean herbarium, as already shown. The barren stem of this plant is without doubt the 'Equisetum arvense longioribus setis' of Ray's 'Synopsis,'* and it also seems to me that the 'Equisetum pratense longioribus setis,' of the same work, although added by the careful Dillenius, is the same plant. Still this latter has sometimes been considered distinct as a species, and identical with the continental E. pratense, which is so carefully described by Roth,† and previously, although not so fully, by Ehrhart.‡ Roth, however, admits that he had never seen the catkin, and the circumstance of this being found on a branch-bearing stem forms the chief diagnostic of the species. Willdenow, who describes the species,§ confesses he has not seen it at all, and almost every other author omits it altogether: thus it appears not improbable that some form of E. arvense was the plant originally intended. The 'Equisetum nudum minus basiliense' of Ray can be none other than the fertile stem of E. arvense, as I think is sufficiently proved by the following passage.—"This was first shew'd to Mr. Lawson at Great Salkeld, but grows in so great plenty there and everywhere on the banks of the River Eden, that he could not but wonder that this was the first time of its being observ'd in England. 'Tis an early and quickly fading Vernal Plant, which might probably be the Occasion of its not being hitherto taken notice of by those curious Gentlemen, who commonly began their Circuits too late in the Year for such a Discovery."‖ The 'Equisetum nudum minus variegatum basiliense' of Bauhin,¶ is quoted by Smith as synonymous with his E. variegatum, and by Linneus as synonymous with his E. hyemale, which plants widely differ from the early disappearing plant described by Mr. Robinson in the passage above cited.

* Syn. 130. † Roth, Flor. Germ. iii. 6.

‡ Ehrhart, Beitrage, Band iii. p. 77, n. 36. § Species Plantarum, v. 6.

‖ Th. Robinson Ess. towards a Natural History of Westm. and Cumberl., p. 92, as quoted in Ray's Synopsis, p. 130.

¶ Pin. 16, Prodr. 24, Theatr. 250. no f. teste Smith.

The figures of this very common plant are so different, that it seems impossible to reconcile the discrepancy otherwise than by a reference to the protean character of the original: that in Curtis's 'Flora Londinensis' * may perhaps be cited as the best.

The corn-field Equisetum is supposed to be very injurious to cattle; it is, however, most probable that they will not touch it, unless compelled by extreme hunger.

This seems to be the only British species in which the fertile and barren stems are perfectly and constantly distinct, and of a different structure, the former having generally completely vanished long before the latter have acquired their full development. In those species which are constantly simple, *i. e.*, without whorls of branches, it appears the character of each stem to produce a terminal catkin, consequently, there is no observable difference in the structure of the fertile and barren stems: in the following species, E. palustre and E. fluviatile, the same general character obtains, the grand distinction being in the almost constant presence of whorls of branches: in E. sylvaticum a marked difference is observable, for not only are a portion of the stems exclusively fertile and rapidly evanescent, but the *mixed* stems — those which bear both catkin and branches — are decidedly different to the exclusively barren ones, being more succulent, and having larger and looser sheaths: in E. umbrosum the discrepancy between fertile and barren stems is so great, that the combination of the two, although common, has not been noticed by our British authors: in E. Telmateia these mixed stems are comparatively rare exceptions, and have almost been regarded as unnatural or monstrous, so that we arrive, by a nearly imperceptible transition, at E. arvense, in which the two kinds of stem are perfectly and constantly distinct.

The figure at p. 727 represents two stems of the corn-field Equisetum, of the natural size, *a a* being the fertile, *b b* the barren stem: they are drawn from living specimens, and show the immature barren stem synchronous with the perfectly ripe fertile one, both stems ascending from the same rhizoma; and I may here remark that the appearance of the barren stem at this early period, is very similar in E. sylvaticum, umbrosum, Telmateia and arvense, so that the figure referred to gives a good idea of them all. The fertile stem selected for the figure, as one of average size and proportions, may be thus described: it is about nine inches in length, and is divided into eight joints, which decrease in length from the catkin downwards: the stem is extremely succulent, of a pale brown colour, smooth, and entirely without furrows: the sheaths are loose, somewhat gibbous, and distinctly ribbed: they are of a pale yellowish brown colour at the base, and have about ten dark brown long-pointed teeth: these occasionally adhere at the points, in twos and threes.

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* Curtis, Flor. Lond. fasc. 4, t. 64.

The catkin is an inch and a quarter in length, rather slender, blunt and rounded at the apex, and stands on a distinct foot-stalk, usually about equal to half its own length; it is of a pale delicate brown colour, occasionally tinged with rosy red; the scales are very variable in number, being sometimes scarcely a hundred, at others reaching two hundred and fifty. The catkin is mature in May, and sheds abundance of seed, of a beautiful green colour.

The following is a description of a barren stem. Length twenty-eight inches; very slender at the summit, and increasing to the size of a goose-quill at the base: the colour is glaucous green towards the summit, and pale green towards the base: the stem has from ten to sixteen distinct but not very deep furrows, and the same number of equally distinct ribs, which are furnished with very minute siliceous points; the number of joints is twenty-one: the length of the internodes varies from half an inch at the summit to two inches at the base: the sheaths, including the teeth, are scarcely more than a quarter of an inch in length; they are but little larger than the stem, not, however, clasping it tightly, as in E. fluviatile; they are furrowed in the same manner as the internodes, but the ribs are double: the teeth are ten to sixteen in number, wedge-shaped, acute, and dark brown or black; they are commonly, but not constantly, furnished with a narrow, brown, marginal membrane: I have never seen the teeth of this species with the distinct, white, semi-hyaline membrane, which appears constant in E. palustre, E. umbrosum, and some other species. There is a whorl of branches on each of the thirteen upper joints, the eight lower ones being branchless: the number of branches in a whorl varies from four to thirteen. The branches are eight or ten inches in length, rather stout, spreading, slightly ascending, four-ribbed, and composed of ten or twelve joints, of which the apical ones are shortest; the basal joint is shorter than the three which follow it, but is much longer than in E. palustre, and still more so than in E. umbrosum: the short sheath at the base of each branch usually terminates in obtuse brown segments: the other sheaths are loose, and terminate in four long acute teeth, which are generally concolorous throughout; and a single rib invariably ascends undivided to the extreme point of each tooth.

The variations of the barren stem of this plant appear almost infinite; perhaps its normal character may be defined as nearly erect, with spreading and slightly drooping branches: the following is an enumeration of the more strongly marked varieties.

A. — Stem erect; branches simple, very rigid, erect and densely crowded.

B. — Stem erect; branches simple, less rigid, spreading, slightly ascending.

C. — Stem erect; branches simple, gracefully drooping.

D. — Stem erect; branches compound in the same manner as in E. sylvaticum, and gracefully pendulous.

E. — Stem almost prostrate, with semi-erect, very long, compound, feeble branches.

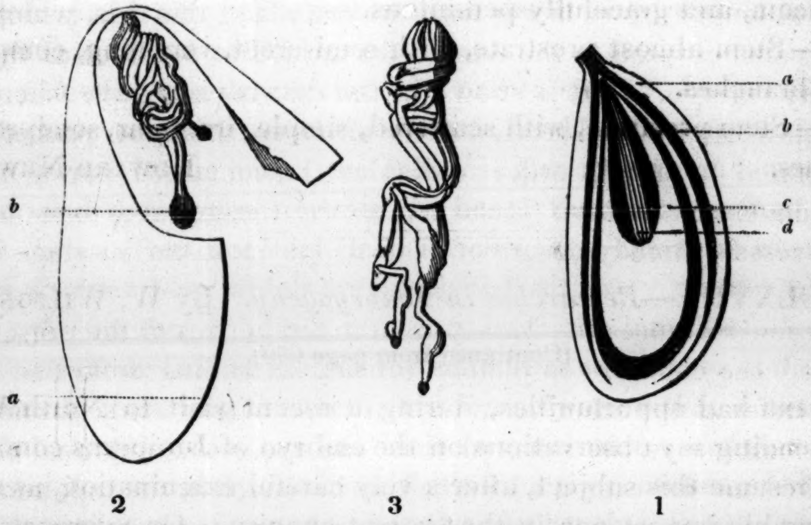
F. — Stem prostrate, with scattered, simple, irregular, semiprostrate branches.

EDWARD NEWMAN.

ART. CLXVIII.—*Researches in Embryogeny.* By W. WILSON, Esq.

(Continued from page 659).

HAVING had opportunities, during a recent visit to North Wales, for extending my observations on the embryo of Juniperus communis, I now resume this subject, after a very careful examination, as one of considerable importance in the present enquiry. On reference to my former observations (Phytol. 625, fig. 3, 4), it will be seen that the naked ovule consists at first of a wide-mouthed sac, at the bottom of which is seated a roundish nucleus, somewhat flattened at the top. The nucleus, at this early stage, is composed of a simple mass of cellular tissue, without any tunic. The upper part of the ovules (of which there are three in each flower) projects beyond the floral integument, and there is thus offered every facility for direct communication between the pollen and the nucule; so much so, that the grains of pollen might probably gain immediate access to the interior without the intervention of pollen-tubes. Indeed, if the views of Schleiden were well founded, and if the upper part of the ovule be denied the function of a stigma, we might expect that this plant would clearly and readily exhibit proof of such access. If we fail to trace the pollen-tubes into the nucleus, where all the parts are so much exposed to view, the integuments so few, and the whole structure so much simplified,—in vain shall we hope to verify the statements of those who maintain this doctrine; and for this reason I strongly recommend those who are interested in the enquiry, to lend their aid in the investigation of this plant at the proper season. From the period when the flowers expanded to the middle of August, I had no means of studying the subject; and it will be seen by what follows, that the ovule, during this interval, has undergone a most remarkable change. To illustrate my remarks, I have judged it best to present the annexed diagram (fig. 1), representing a longitudinal section of the ovule in the third month after the expansion of the flower.



Juniperus communis.

Fig. 1.—Longitudinal section of ovule three months after the expansion of the flower. *a*, primine. *b*, secundine. *c*, tercine or albumen, having a cavity (embryo-sac ?) in the upper part. *d*, a bundle of loose cellular tissue, suspended from the top of the cavity, and bearing at its extremity the rudiment of the embryo. The embryo, when mature, extends throughout the whole length of the albumen.

Fig. 2.—Longitudinal section of the tercine of the ovulum, dissected, to show the rudimentary embryo, *b*, suspended from a bundle of vessels.

Fig. 3.—The bundle of vessels in a younger stage, partly separated, to show the structure.

The outer portion of the ovule (*a*) has become much enlarged in all parts except at the summit, where there still exists a minute orifice, and the substance, once soft and cellular, is now altered into a hard bony shell, lined on the inside with a thin membrane, which may be detached when the berry is fully ripe. The next integument (*b*) is the secundine, white, and somewhat leathery in texture, attached by its base to the bottom of *a*. It corresponds with the nucleus figured at p. 625: all the contained parts have been subsequently developed.

The tercine (*c*) is suspended from the top of *b*, and constitutes the albumen in the mature seed. It is already white and amylaceous internally, and is surrounded by a yellowish skin. The upper part of the tercine or albumen contains a cavity (the embryo-sac) which gradually narrows to the top, where there is no visible orifice. Within this cavity is suspended, from the apex of the tercine, a bundle of fibres (*d*), composed of large, elongated, crooked cellules, enlarging as they descend, each fibre slightly cohering to those which are in contact with it. Three or four of the terminal cells of the bundle, are tipped each with a roundish mass of opaque granular matter, one of which at length grows larger than the rest; and this it is, which, after much pains devoted to the enquiry, I am led to consider as the rudimentary embryo.* It is shown in the drawing at fig. 2, where *a* represents a longitudinal section of the albumen, the upper part of which is lacerated by art, in order to display the contained parts, namely, the rudimentary embryo (*b*) suspended by the lax and tortuous bundle of vessels already described, and which in an earlier stage is seen at fig. 3.

In a few instances the immature or green berries of the present season had the embryo completely formed, extending from one end of the albumen to the other, as in the fully ripe berries of the former year, still remaining on the same plants. In these the umbilical cord (*d*) is pushed up and crumpled into a narrow space at the top, and by its presence at that stage has materially assisted me in ascertaining that the body *c* is not itself the embryo, but the nidus in which the embryo is elaborated, *long after the usual period of fecundation.*

From the foregoing account it seems very improbable that so many newly developed parts should derive their existence from a pollen-tube, while the embryo itself is still in a rudimentary state; and the idea of the formation of a *vésicule embryonnaire* (*utricule primordiale*, Mirbel), such as Brongniart describes it, appears to be utterly inadmissible in the present case. Questions of this intricate nature are however to be disposed of only after rigorous investigation; and it is hoped that some of the readers of 'The Phytologist' will be able to supply the links which are wanting to complete the present enquiry.

As an appendix to my remarks on Statice Armeria (Phytol. 657), I wish to state that during my absence from home two other species,—

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* It may possibly be the *utricule primordiale* of Mirbel and Spach, "whose special office it is to form the embryo, (dont l'office spécial est de commencer l'embryon.)"

S. Limonium and S. spathulata,—were carefully examined and compared with the one already described. In S. Limonium, the cellular body within the ovarium proceeding from the styles, is attached to the apex of the ovule, but so slightly, that I have not succeeded in dissecting away the surrounding parts without breaking the connexion. The secundine has no conical cavity at its apex, like that seen in S. Armeria, and there is no appearance of penetration: on the contrary, the suspensor merely covers the apex of the ovule, like a pentagonal cap. A similar structure is observable in S. spathulata, only that the suspensor is crooked, and obliquely attached to the ovule. In both these cases, the connexion exists previously to the expansion of the flower-bud.

Having paid some attention to Tropæolum majus since the essay on that plant was republished (Phytol. 659), candour obliges me to confess that I have not been able to verify some of the statements contained in Dr. Giraud's paper; and I am compelled either to question the aptitude of his observations, or to admit my own inability to follow him in the path which he has trod. I do not deny that his conclusions are just, but they seem to me to be founded upon data less cogent than actual demonstration. I am not even satisfied that he is correct in saying that the ovule is *anatropous:* if it be so, the change must take place at a much earlier period than the one which he indicates. But admitting, for the present, that his remarks are accurate, I would observe that the ovule of Tropæolum is by no means, as Schleiden himself confesses, an easy subject for investigation; and that whoever succeeds with that, may calculate on still greater success in the examination of those which I have endeavoured to illustrate: and to such an one I would very willingly resign the task, as much more competent than myself to explore these secrets of Nature. It is remarkable enough that Tropæolum majus has been selected by Schleiden as one of the examples in support of his doctrine, and he has given figures which exhibit the pollen-tube in actual communication with the ovule, introduced within the micropyle. It is to be feared that Schleiden is not the only person chargeable with having *imagined* rather than actually *seen* some things connected with this intricate subject; and the "necessity of adopting a good method of oft-repeated, scrupulous and patient observation" cannot be too much insisted upon. In no case can the microscope be safely trusted, unless the parts can be separated and displayed by careful manipulation. Much of the knowledge that is acquired while engaged in dissecting objects under the microscope, is otherwise unattainable; and many optical illusions are dispelled by calling in the organ of touch to aid and correct the eye in these subtile disquisitions.

W. Wilson.

Orford Mount, Warrington,
August 31, 1843.

Art. CLXIX. — *Rarer Plants observed near Weymouth.*

By G. S. Gibson, Esq.

The following is a list of some of the rarer plants observed in the vicinity of Weymouth, during a fortnight's sojourn in that town in the summer of 1843.

Adonis autumnalis. Corn-fields at Portland.
Papaver hybridum. Near Wyke.
—— *Argemone*. Portland.
Glaucium luteum. Stony beach.
Fumaria capreolata. Lane at Chesil, Portland.
Cochlearia danica. Chesil bank, by the rd.
Cakile maritima. Sandy shore.
Arabis hirsuta. Rocks at Portland.
Silene anglica. Very sparingly near the sluice, Lodmoor.
Linum angustifolium. Near the Ferry-bridge; Backwater banks near gas-works, &c.
Geranium lucidum & *columbinum*. Rocks at Portland.
Medicago maculata. Cliffs &c. in several places.
—— *denticulata*. Sparingly near the Ferry-bridge.
Trifolium ornithopodioides. Chesil bank close to Portland, and at Portland.
—— *maritimum*. By the Backwater and the cliffs.
—— *scabrum*. Sandy shore &c. fr.
Vicia gracilis. Cornfields at Portland.
—— *angustifolia*. Cliffs towards Sandsfoot castle.
—— *lutea*. Field on the cliff near Sandsfoot castle; stony beach at Lodmoor
Lathyrus Aphaca. Fields &c. at Portland, abundant; also near Wyke.
Pisum maritimum. Chesil bank, opposite Wyke.
Rosa spinosissima. Portland.
Petroselinum segetum. Hedges, not uncommon.
Sison Amomum. Hedges, frequent.
Bupleurum tenuissimum. Field by Backwater on the west side, beyond the gas-works; also near the sluice, Lodmoor.
Œnanthe pimpinelloides. Moist meadows &c. frequent.
Silaus pratensis. Meadows.
Crithmum maritimum. Chesil bank, west of the bridge.
Pastinaca sativa. Fields and road-sides.
Torilis infesta. Road-sides.
Smyrnium Olusatrum. Cliffs nr. the pier.
Eryngium maritimum. Chesil bank and by Ferry-bridge.
Rubia peregrina. Rocks at Portland.
Asperula Cynanchica, *Fedia Auricula* and *Prenanthes muralis*. Portland.
Carduus nutans (white flowers). Portland, near the church.
—— *Marianus*. Portland.
Cichorium Intybus. Corn-fields and road-sides.
Conyza squarrosa and *Solidago Virgaurea*. Portland.
Senecio sylvaticus. Cliffs by Backwater.
Aster Tripolium & *Pyrethrum maritimum*. Salt-marshes.

Campanula glomerata. Maumbury, near Dorchester.
——— *hybrida.* Portland, in corn-fields.
Gentiana Amarella. Maumbury, near Dorchester.
Erythræa pulchella. Portland cliffs and by Backwater.
Convolvulus Soldanella. Chesil bank near the road.
Borago officinalis. Portland.
Linaria spuria. At Lodmoor, and road to Radipole.
——— *Elatine.* Fields, rare.
Galeopsis Ladanum. Corn-flds. Portland
Orobanche elatior. Maumbury near Dorchester.
——— *minor.* Sparingly at Portland.
Plantago maritima and *Glaux maritima.* Marshes near the Backwater.
Salsola Kali. Sands near Ferry-bridge.
Chenopodium maritimum. Salt-marshes.
——— *fruticosum.* Chesil bank, west of the bridge.
——— *ficifolium.* Near the Backwater, very rare.
——— *murale.* Waste ground.
Atriplex portulacoides. Marshes by Backwater.
——— *littoralis.* Chesil bank.
Beta maritima. Salt-marshes and shore.
Salicornia herbacea. Marshes by Backwater.
Rumex pulcher. Road-sides, frequent.
Thesium linophyllum. Cliff by Sandsfoot sands, sparingly.
Euphorbia Paralias. Chesil bank, near the road.
——— *Portlandica.* Portland and Chesil bank.
Euphorbia amygdaloides. Portland.
Mercurialis annua. Waste ground.
Triglochin maritimum. Marshes, Radipole &c.
Iris fœtidissima. Hedges, frequent.
Tamus communis. Hedges.
Ruscus aculeatus. Roadside nr. Broadway.
Ruppia maritima and *Zannichellia palustris.* Salt-marsh ditches, near the sluice.
Zostera marina. In the sea, near the jetty.
Juncus acutus. Shore of the backwater.
Scirpus maritimus. Near Radipole, &c.
——— *Savii.* At Portland.
Carex arenaria. Sands near Ferry-bridge.
Alopecurus bulbosus. Salt-marshes.
Ammophila arundinacea and *Phleum arenarium.* Sandy shore.
Gastridium lendigerum. Backwater cliffs; also near the preventive station, northward.
Poa distans, maritima and *procumbens.* Salt-marshes by Backwater.
Festuca bromoides. Backwater cliffs.
——— *uniglumis.* Sandy field near Ferry-bridge, and by the road on Chesil bank.
Avena fatua. Fields and cliffs frequent.
Hordeum pratense. Fields &c. frequent.
——— *maritimum.* Lane near the gas-works.
Triticum loliaceum. Road near Sandsfoot castle, &c.
——— *junceum.* Sandy coast by Ferry-bridge.
Brachypodium pinnatum. Cliffs &c. plentiful.
Rottbollia incurvata. Salt-marshes abundant.

Several plants peculiar to the neighbourhood of the sea, but not uncommon near it, such as Silene maritima, Arenaria marina and peploides, Statice Armeria, &c., I have purposely omitted.

The following, which are stated in the 'Botanist's Guide' to grow near Weymouth, I have searched for unsuccessfully; namely, Vicia bithynica, Lathyrus Nissolia, Polycarpon tetraphyllum, Amaranthus

Blitum, Cladium Mariscus, Calamagrostis Epigejos and lanceolata, and Agrostis setacea; and am ready to fear that most of them have become extinct. Salicornia radicans, too, does not appear to grow at Weymouth, and probably S. herbacea, which is very fine and abundant, has been mistaken for it.

I explored all the localities given for Vicia lævigata, without success: these localities are, in the 'Botanist's Guide,' Portland Island, Chesil bank, and Lodmoor near Weymouth; in the 'English Flora,' a field half way between Weymouth and Portland ferry, near the sea. At Portland island and the Chesil bank I could discover nothing at all similar to it, though the latter was examined for several miles; at Lodmoor the stony beach produces Vicia lutea abundantly, as also does a green declivity of the cliff, about half way between Weymouth and the ferry, probably the field referred to in the 'English Flora;' but in neither place could I see any trace of V. lævigata. Perhaps some of your correspondents may be able to state whether it has recently been found near Weymouth, or whether there is now any authentic locality for this very rare plant. G. S. Gibson.

Saffron Walden, August, 1843.

Art. CLXX. — *Notice of 'A Visit to the Australian Colonies.* By James Backhouse.' London: Hamilton, Adams & Co. 1843.

(Concluded from p. 608).

On the route from Appin to Illawarra, over a sandstone country, elevated about 2000 feet above the level of the sea, four species of Grevillea were observed, one of them having brilliant scarlet blossoms, and a gay Mirbellia, with bluish purple flowers, besides several species of Dillwynia, Pultenæa and Boronia, and the gigantic lily, Doryanthes excelsa. In descending, the sides of a rough track, called the Bulli Road, were ornamented with a gay Prostanthera, Pimelia hypericifolia, Pittospermum undulatum and another fragrant species of this genus, and a handsome white Clematis.

In a forest in the vicinity of Wollongong —

> "Some large species of fig are met with, as well as large gum-trees, and species of Tristania; also Metrosideros capitata, called here turpentine-tree, which attains a large stature, and Sterculia acerifolia, which has large clusters of small flame-coloured flowers, that produce a striking appearance in spring. The cabbage palm, Corypha australis, abounds by the sides of water-courses. Great numbers of this palm, which has elegant, fan-like foliage, and hard, purple seeds, the size of a marble, are

> destroyed for the sake of their trunks and leaves. The trunks, which are sometimes eighty feet high, and are rough with scars where the leaves have fallen off, are occasionally split, and converted into posts for fencing; they are also used for slabs in temporary buildings. The inside being rather sweet, and not hard, though fibrous, is eaten by pigs. The mature leaves are used for thatching, those just beginning to expand, for making hats, and the heart, or cabbage, of the young, unexpanded leaves, is eaten either raw or cooked. A heart-leaved species of pepper climbs like ivy among the lofty trees, and hangs in festoons from their branches, almost to the ground. Ferns and orchidaceous plants abound on the trunks and limbs of many of the trees. One of the latter, Sarcochilus falcatus, with blossoms nearly as white as snowdrops, is now in flower. In these forests, there are many epiphytes of the Orchis tribe, the habits of which are worthy of notice, both as exhibited here, and in other parts of the Colony. Dendrobium speciosum generally grows in fissures of the sandstone rocks, among the loose fragments, mixed with vegetable matter, but I once met with it, of extraordinary size, in the cleft of an old fig-tree, among vegetable remains. D. linguiforme generally creeps on grit rocks, rarely on the living bark of figs and Casuarinæ. The other species of Dendrobium, with the genera Sarcochilus and Gunnia, grow on the bark of living trees. Once I saw Dendrobium calamifolium on a rock; but both this and the other species growing on living trees, begin to languish when the trees to which they are attached, die, probably from the portion of their roots adhering to the bark becoming dried; a circumstance that is prevented, when they are cultivated in England, by the moist atmosphere of an orchideous-house. The Australian species of Cymbidium universally strike their roots into the decaying portions of trees, in which they may sometimes be traced many feet. Once only, I met with one growing from among the paper-like laminæ of the bark of Melaleuca viridiflora, and it looked sickly."—p. 426.

On the way to Shoal Haven, Seaforthia elegans is plentiful in shady places, and many parts of the forest are gay with a species of Goodia, which forms a large shrub, covered with racemes of yellow, pea-like blossoms, tinged with orange. A species of indigo, with rosy pink flowers, and tree-nettles, one of which was sixteen feet in circumference, attracted our traveller's attention. Asplenium Nidus and Acrostichum alcicorne were growing on the limbs of enormous fig-trees, and even some of the lofty cabbage-palms were encircled by the latter, while ferns of less magnitude—Polypodium tenellum and quercifolium, and Niphobolus rupestris—were climbing the trunks of trees like ivy, and others—as Adiantum formosum and assimile, Doodia aspera and Lomaria Patersonii—were scattered about the surface of the ground, intermingled with tree-ferns of the genus Alsophila, besides Calanthe veratrifolia, and several other terrestrial Orchideæ. In a subsequent walk, the rock-lily, Dendrobium speciosum, was in blossom on a rock, with a spike of white flowers, fading into yellow. Other specimens of the tree-nettle were measured, and found to be eighteen, twenty, and twenty-one feet in circumference. These are probably the largest and most severe nettles in the world; our author found the sting as painful as that of a wasp: the leaves are heart-shaped, and some of them six inches across: the stinging hairs are not the most numerous, and are readily distinguishable when held to the light by the vesicule of poison at their base. On the ascent of the Cambewarra mountains, Dendrobium ruscifolium was observed in flower on the trees, and two smaller epiphytes on mossy logs nearer the top of the mountain.

In the neighbourhood of Goulburn are certain plants allied to those of England—such, for instance, as some species of Potamogeton and Villarsia—while others—as Typha latifolia and Myriophyllum verticillatum — are thought to be actually identical. At Arthurslee, white clover, trefoil, a spinous-seeded medic, rib-grass, rye-grass, shepherd's purse, Erodium cicutarum and moschatum, and some other English plants, had established themselves, as is the case in many other parts of the colony; they spread and thrive often more vigorously than in their native soil. This fact leads us to the often mooted question of interchanging the productions of distant climes. Wherefore should not we gladly receive the beautiful products of other regions, and adopt them as our own? More than a hundred of our British plants are perfectly naturalized in Australia, and we may fairly anticipate the day when Australia shall contribute her quota towards the Flora of Great Britain. The mode of introduction matters but little: at first it may be intentionally introduced into gardens with care and pains-taking, but in a few generations the plant may escape its destined boundary, the seeds may be conveyed by birds or scattered by the wind, and the produce may become so established that our endeavours to eradicate it would prove wholly fruitless.

After a voyage to Hobart Town, our traveller visited Port Adelaide, on the 30th of November, 1837; and we have the following sketches of its botanical productions.

"We walked about seven miles to Port Adelaide. The way was over two level plains, separated by a slight, sandy rise, covered with wood. The soil of the plains was a reddish loam, having a slight admixture of sand and calcareous matter. They were covered with tufted grass and small herbs. Among the latter was a species of Eryngium, a foot high, the leaves of which are eaten with avidity by cattle, and some small yellow-flowered everlastings. Near Port Adelaide, the land becomes saline, and produces crimson Mesembryanthemums, of three species, along with numerous maritime shrubs. On a sand-bank separating the plain from the salt marsh, which borders the creek or inlet that forms the harbour, there are trees of a species of Callitris, resembling cypress. These are here called pines, and have trunks about 40 feet high, which are used for piles. Casuarina quadrivalvis and Banksia australis likewise grow

> here. On this bank there was an Orobanche, very like Orobanche minor of England. * * The salt marsh was covered with two species of Salicornia, one of which was shrubby; interspersed among these were two species of Frankenia, one of which was bushy, about a foot high, and besprinkled with rosy, pink blossoms, the size of a silver penny. The creek was margined with mangrove, Avicennia tomentosa."—p. 510.
>
> "A white-flowered Morna, a downy, drooping-flowered Pimelea, a broad and a narrow-leaved Xanthorrhœa, and several other striking plants, were growing in the forest on the red sandstone. On the argillaceous hills, there was a shrub belonging to the Gentianæ, with leaves resembling those of the greater periwinkle, and a Pomaderris, with pale leaves next to the heads of flowers. Todea africana, Grammitis rutæfolius, and some other ferns, were also here. Upon the limestone hills were a broad-leaved Goodenia, an Orobanche, and Lobelia gibbosa: this last is a singular annual, flowering after its leaves have faded. A considerable number of curious insects were feeding in a thicket on the blossoms of a Leptospermum."—p. 520.

Near Albany, in King George's Sound, several remarkable plants attracted our traveller's attention.

> "Among these may be enumerated Kingia australis, which resembles a grass-tree, of about eight feet high, but differs in its flower-stems and blossoms; Sollya heterophylla, which produces elegant blue flowers, on a privet-like, half-climbing bush; Anthocercis viscida, which forms a large, bushy plant, with striking, white flowers, and grows close upon the beach; and Cephalodea follicularis, which has small, whitish flowers, on a stalk a foot and a half high, and which produces pitcher-like vessels among its leaves, at the base of the flower-stem: the pitchers have lids, are an inch deep, contain water, and often drowned insects, and are of very singular structure." p. 527.

On the route to Freemantle, on New Year's Day, 1838, the Nuytsia floribunda is described as attaining a height of forty feet, and a circumference of six feet; its top was crowned with a mass of golden, orange or yellow flowers: other beautiful flowers were in blossom, a yellow Calothrix, a yellow and red and a sky-blue Leschenaultia, a crimson linear-leaved Callistemon, a scarlet Melaleuca, a crimson Calothamnus, and several species of Jacksonia.

And here we must take our leave of this highly interesting volume. Our quotations have been more copious, and our notice has extended to a greater length than we originally intended, but we trust that our readers will not object to it on these accounts, since we have presented them with a more complete sketch of the vegetation of these regions than has ever been given in so condensed a form. With regard to the localities, we fear there may be some difficulty in following them without a map, since many of the names are but of yesterday, and none of them can lay claim to much antiquity. In the present day, however, maps of these colonies are daily becoming more numerous and more correct, and these will furnish the means of tracing our traveller throughout his arduous and philanthropic pilgrimage. We lay down the volume instructed and improved by its perusal, and, however distant such an end may have been from the real object of his journey, the scientific world must acknowledge having received at the hands of James Backhouse an invaluable contribution towards the Natural History of Australia.

Art. CLXXI.—*Varieties.*

365. *New locality for Saxifraga Hirculus.* I have taken the liberty of sending you a few specimens of the rare Saxifraga Hirculus from a new locality, which I discovered in September, 1840, on the Westmoreland mountains. The place where I found it growing very plentifully, is a marshy piece of ground about three and a half miles S.E. from Crossfell mountain, about five miles N.W. from Caldron Snout, a waterfall already mentioned in your pages (Phytol. 74 and 113), and about a mile and a quarter S.W. from a shooting-box erected last year by the Earl of Thanet, at a place called Netherhearth. The specimens enclosed were gathered in August, 1842, when I paid a second visit to the spot: at the same time, and about 200 or 250 yards to the north of it, I discovered Polemonium cæruleum growing upon a limestone rock. I was very much surprised at meeting with the latter plant in such a wild and elevated situation, never having heard of its being found growing wild, even in more sheltered places, in this part of the country, but there cannot be the slightest doubt of its being indigenous.—*John Bell; Middleton in Teesdale, August* 19, 1843.

366. *New locality for Melittis grandiflora.* The readers of your valuable periodical may be pleased to know that Melittis grandiflora has been found in a wood on the Cotswolds, four miles from Cheltenham: this, I believe, is the most northern habitat yet known for this handsome plant. It was found last year for the first time, in a wood called Puckham Scrubs, by Mr. Gordon, of this town: it occurs in several spots in the same wood. In a boggy meadow near this, hundreds of the beautiful Parnassia palustris are now in bloom. — *J. Buckman; Cheltenham, September* 2, 1843.

367. *Note on an apparently undescribed Hieracium.* The plant I now enclose is not described by any writer on British plants. I have it under the MS. name of Hieracium Hypochœroides. The plant grows at Malham Cove, and other places in the neighbourhood of Settle (in Yorkshire). You will find the plant mentioned by Smith

in 'English Flora,' (iii. 375), as Hypochœris maculata: you will also find the same plant referred to the H. maculata by the following authors, viz., Withering, in his fifth edition, page 852; Watson, in his 'New Guide,' page 285; and Baines, in his 'Yorkshire Flora,' page 64. It is now fourteen years since I examined this plant, and found it to belong to the genus Hieracium; and as it is now upwards of thirty years since this error crept into our books on British plants, I should think it quite time for it to be corrected: there is no doubt of its being a species of Hieracium, and a plant which is not described by any writer on British Botany. It may be described by continental botanists, and if it be, the name I have given to it will of course have to be given up, and the one adopted which had been given to it before. The enclosed specimen is one of its most common forms: you will observe it is two-flowered; it is rarely found with one flower. At the first glance the plant has certainly a great resemblance to Hypochœris maculata, but when subjected to a more minute examination it will be seen not to belong to that genus.—*Saml. Gibson; Hebden Bridge, September* 5, 1843.

368. *Note on Plants apparently indigenous.* Since Sir William Jackson Hooker tells us (in the fifth edition of his 'British Flora,' Introduction, page viii.) that the "*Martagon Lily* and the *American Touch-me-not* can have no claim to be considered British plants," I would just ask Sir William seeing he has in that edition of 'British Flora,' inserted the ITALIAN RYE-GRASS without the asterisk to denote its being naturalized, or any of your readers, what claim that plant can have to a place in our Flora, since it has not yet gone beyond the bounds of cultivation, and it is but a very short time since it was brought to this country? If I had found the Mimulus luteus on our list, I should not have been half so much surprised as I was to find that the *Italian Rye-Grass* had found its way into our Flora, for indeed the Mimulus luteus has often been found where it might have been considered truly wild, had we not known from whence it came. The following is an extract from a letter which I received from Mr. John Gilbertson, of Preston, dated September 2, 1843. "Perhaps you will be kind enough to inform me whether the monkey-plant, so much cultivated in our gardens, is a native of this country, at least if it is known to be so? I had the pleasure of finding it in great abundance a few weeks ago." We might mention a great many plants which has quite as much claim to a place in our Flora as the above Lolium can have.—*Id.*

369. *Note on Cystopteris regia and C. alpina.* At page 712 of

'The Phytologist,' I find the following question — "Are the plants published under the name of C. regia and C. alpina, in the Lancashire fern list (Phytol. 477), identical with the Layton plants?" In reply to this question, I would say that our plants, so far as my observations have gone, are referrible to one species: if I were to consider them more than one species, the C. regia of Smith and the Layton plant would not be the same, nor would either of them be the true C. alpina: the C. regia of Smith and the Layton plant are as distinct as any two forms I have seen. I cannot at present give your correspondent any particulars concerning my Cystopteris, as most of them are now in the hands of Mr. Newman; but if looked over there will be found a few specimens of the *Layton plant*, and one of Sir James Edward Smith's C. regia, *which is from his own hands*, and likewise a specimen of the *Snowdon* plant, which is from one of the parties mentioned by Smith; and I think that if Mr. Newman looks over my Cystopteris (those from Broadbank and Cliviger) he will find amongst them plants that are not very unlike Smith's C. regia, and others which are somewhat like the Layton plant, and perhaps a few others which are quite as distinct as any of the forms pointed out by Smith and others.—*Id.*

370. *Note on Vaucheria terrestris, Protonema muscicola, &c.* Having observed the Vaucheria terrestris, DC., to be almost constantly accompanied by the young state of some moss — probably Tortula unguiculata—I am inclined to think that this Alga is merely a young state of the moss, previous to the development of the stem and leaves. This is confirmed by a remark of Hooker, in his fifth vol. of the 'English Flora,' who says that Byssus velutina, L., must be excluded from the list of cryptogamic plants, as it has been observed to be a young state of one of the Polytricha. This Byssus velutina is quoted by Vaucher, in his work on Conferva, as a synonyme of his Ectosperma terrestris, and this again is a synonyme of Vaucheria terrestris. This would seem to prove that the genus Vaucheria is nothing more than a rudimentary state of various mosses. Hedwig states that the sporules of mosses, in germinating, produce ramified, cylindrical, primordial leaves, of indeterminate number, and that these leaves are more permanent in Phascum serratum, &c., than in most mosses. But the various species of Vaucheria are said to bear fruit, and that they are reproduced by the ovoid vesicles observed in their ramifications. I do not think there will be any great difficulty in explaining this away, for we observe many cryptogamic plants which, when partially developed, put on a totally different appearance

from that of their full development, which only takes place under favorable circumstances, and yet these partially developed states have a power of reproduction. I imagine then that the Vaucherias are the rudimentary states of the mosses, and that the ovoid vesicles are analogous to granules, and reproduce the primordial state of the moss, which only developes perfect leaves and fruit under favorable circumstances. Again, I have never found Protonema muscicola, which is common on old stumps, unaccompanied by a Jungermannia; and I have thought, from careful examination, that I could detect a connexion of the filaments, of which this Alga consists, within the base of the stem of the Jungermannia: if so, this Protonema will be the analogue of Vaucheria among mosses. Protonema cryptarum is suspected by Agardh to be the young state of a Phascum. There is a curious species which grows on the stems of Orthotrichi,—P. Orthotrichi. I suspect this to consist of aërial roots of the moss, which are sometimes much more produced than at others. I should like to have the opinions of more experienced cryptogamic botanists than myself on these points. Before I close this note I would wish to remark that Thelephora cærulea, *Schrad.*, among the Fungi, and Mycinema phosphoreum, *Ag.*, among the Algæ, of Hooker's 'English Flora,' are the same plant, and are both referred to Auricularia phosphorea, Sow. Fung. III. t. 350.—*Ph. B. Ayres; Thame, September* 7, 1843.

371. *Short Account of an Excursion to Tilgate Forest and the West Hoathly Rocks.* On Monday, August 21st, 1843, accompanied by three botanical friends, I made an excursion to the rocks at West Hoathly, and from thence to Tilgate Forest, starting from the Three Bridges station on the Brighton railway: our attention was first attracted to a large pool, by the side of the railway, and near the station, and although so recently excavated, it furnished us with many plants of interest; among them were Centunculus minimus, Erythræa pulchella, Scirpus setaceus, Juncus lampocarpus, Typha latifolia, Alisma Plantago, with several other aquatic plants: a short distance up the lane towards Worth, and near the pool, we collected Hypericum Androsæmum, Blechnum boreale, Aspidium spinulosum, Rubus Koëhleri and R. macrophyllus. We then proceeded to Turner's hill, distant about three miles: the lane through which we passed was very sandy; the common hedge-plants here were Erythræa Centaurea, Solidago Virgaurea, Aspidium Filix-mas, Calluna vulgaris, Erica cinerea, &c. On the left hand bank, near Turner's Hill Gate, some very fine specimens of Asplenium Trichomanes were collected. The rocks, which are about one mile from this spot (direct south),

are situate in a wood on the left hand side of the road, and form almost a semicircle, terminating very abruptly, and being conspicuous objects wherever they are freed from the thick underwood: upon these rocks flourishes, in great luxuriance, the beautiful Hymenophyllum Tunbridgense, covering, in some instances, the entire face of the rock, but growing most vigorously in the crevices where the sun never penetrates. After enjoying the delightful view from the summit of the highest rocks, where we observed Vaccinium Myrtillus and Convallaria majalis, in large patches, but not in flower, we turned our steps towards Tilgate Forest. On reaching Turner's Hill Gate, we took the left-hand road, which, after about three miles' ride, and finding Linum angustifolium in great plenty on a bank in the lane, brought us to "Starve-Mouse Plain," a swamp lying between Pease Pottage and the Brighton railway, where we commenced our researches, Exacum filiforme being the chief attraction, which we soon found, growing in the greatest profusion and of extraordinary size, some specimens measuring five inches in height and much branched: we also collected Lycopodium Selago, inundatum and clavatum, Narthecium ossifragrum, Eleocharis multicaulis, Hypericum elodes and humifusum, Scutellaria minor, Radiola Millegrana, Melica cærulea, Erica Tetralix with white flowers, and the elegant Campanula hederacea, which abounds in this locality. We then returned home, well pleased with our day's excursion and success, and not without the hope of revisiting the same spot another year, when we trust that others of our friends will join us, and participate in the enjoyment of such a delightful ramble.—*W. Hanson; Reigate, September* 7, 1843.

372. *Note on Lastræa spinulosa.* You are quite correct in what you say (Phytol. 719) that Aspidium spinulosum of 'English Botany' is only a young weak state of dilatatum: Mr. Mackay, who supplied the very specimen there figured, assured me so years ago.—*W. T. Bree;** *Allesley Rectory, September* 7, 1843.

373. *Another word on Lastræa spinulosa.* I hasten to correct an error in my former communication (Phytol. 719), wherein I expressed a belief that *linearis* is "the only distinguishing epithet the plant has ever received." I have since found that Roth was well acquainted with our plant, and described it very carefully under the name of Polystichum spinosum: our Lastræa dilatata is also most elaborately described as *Polystichum multiflorum* of the same author: the nomenclature of the species will therefore require careful investigation.

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* In a letter to E. Newman.

The names dilatata and spinulosa are apparently synonymous, and both apply to a small group of species rather than to a single one.—*Edward Newman; Peckham, September* 8, 1843.

374. *Mr. Gibson's query on Carex distans.* As no one has yet given a reply, I beg to make some remarks, in order that a question which the editor has thought worth insertion (Phytol. 680) may not be altogether barren and unprofitable. It certainly was not to be expected that a botanist who, by his frequent contributions to this journal, would be regarded as an adept in Carices, should find himself at fault in reference to the subject of his enquiry. Perhaps the fact of his not having yet received an answer may be regarded by some as a proof of the great obscurity of the passage alluded to; I, however, have formed a different conclusion. Whenever the honest desire to acquire useful knowledge is the motive for putting a question, and then only, I think it the duty of every one who is able to do it to furnish the desired information. The querist, however, should endeavour to ask those who are most likely to afford it. In this case, I think the person who has remodelled the specific characters of C. distans and the allied species, in the 'British Flora,' is most competent to clear up the difficulty. If Mr. Gibson cannot do it himself, and if he will assure me in the next Phytologist that *he does not know the meaning of the writer in the passage alluded to*, I will undertake to procure the desired information for him from the fountain head. Of course my own conjectures on the subject, were I to express them, would be open to further question; and remembering what Seneca says, "Many would attain knowledge if they did not fancy that they already had it," I shall make no pretensions to superior skill in a matter which seems so dark and difficult to the enquirer.—*W. Wilson; September* 8, 1843.

375. *Note on Lathyrus Aphaca and other Plants in the vicinity of Halstead, Essex.* The rare and curious Lathyrus Aphaca occurs in several places in this immediate neighbourhood. I have lately noticed it in what I imagine to be an unusual situation, viz. near the edge of a pool in an old marl-pit, where it appeared to thrive remarkably well, and is now ripening its seeds copiously. A short distance from the same spot L. Nissolia occurs, and is by no means an uncommon plant here, confining itself however entirely to calcareous soils, and associating with such plants as Trifolium ochroleucum and Senecio tenuifolius. As interesting plants of this locality, in addition to the above, I may mention the following as having come under my own observation:—Ranunculus hirsutus and parviflorus, Thlaspi ar-

vense, Cardamine amara, Dianthus Armeria, Hypericum Androsæmum, Epilobium roseum, Myriophyllum verticillatum, Sedum dasyphyllum, Chrysosplenium alternifolium, Tragopogon porrifolius, Anthemis arvensis, Linaria spuria, Veronica scutellata and Buxbaumii, Ophrys apifera, Carex vesicaria, and Alopecurus fulvus. — *Thomas Bentall; Halstead, Essex, September* 8, 1843.

376. *Localities for Villarsia Nymphæoides.* This rare plant, confined to a few spots of our island, occurs pretty abundantly in the river Thames, in the neighbourhood of Hampton Court and Hampton, Middlesex. The first locality that I shall mention is at the entrance to the village of Sunbury, where the river is open to the road between that place and Hampton. It occurs again in another spot, a field or two lower down the river; and a third time near Hampton Court, where the river is open to the Hampton road. A fourth locality is a little above Kingston Bridge. All of them are on the Middlesex side of the Thames, and the plant, especially in the first three, covers a considerable surface of the water. The locality above Kingston bridge I have been acquainted with since the autumn of 1837; the others I discovered a few days since. I have not had an opportunity of verifying the locality at Walton, as mentioned in Smith's 'English Flora.'—*Jas. E. Moxon; Twickenham, September* 11, 1843.

377. *Note on the Habits and mode of Growth of Villarsia Nymphæoides, in the above localities.* The main root of the plant seems to be firmly fixed in the muddy bottom of the river, from whence it sends out numerous creeping stems of considerable length, from which arise the floating leaves, placed singly at considerable intervals, and furnished with a tuft of radicles at their point of junction. When fully developed they are slightly sinuated, and wavy at their margins. The flower stems, placed at irregular intervals along the creeping stem above-mentioned, are from one to three feet long, mostly destitute of leaves, excepting at the top, where they are collected into a kind of tuft, from which arise the flower buds in considerable numbers. The flowers, which float just above the surface of the water, are extremely fugacious, the petals being thin and delicate, and only opening fully in the sunshine. The plant, in all these localities, grows in quiet nooks of the river, where it floats, undisturbed by the current, and sheltered from the wind.—*Id.*

378. *Note on Equisetum umbrosum.* As I read your article on Equisetum umbrosum (E. Drummondii of British botanists) a few evenings since, within little more than a hundred yards of where the species grows, I resolved by the next post to send you some fresh-

gathered specimens: this was done, and I hope they reached you in safety. They are from the locality (Wolf-hill) in which the plant was first found in Ireland, by Mr. Thomas Drummond, for in this country, as well as in Scotland, he was the first botanist to notice it. This he did when spending a day with me in botanizing the Belfast mountains, at the time that he was curator of our botanic garden. For the better understanding of this interesting and little known species, I would suggest, if such be not already your intention, that another figure be given in 'The Phytologist.' The figures already published are very good, but the greater number of readers will, I apprehend, judging from *them only*, carry away the impression that the E. umbrosum is a sparingly branched species compared with E. sylvaticum, represented in a preceding page of 'The Phytologist, whereas, on the contrary, its foliage is still more dense and drooping. True, in your description of the barren stem, something like this is stated, but your figure, though admirably representing the plant when it begins to shoot in spring, gives no idea of it in its matured state. On the steep banks of a mountain-stream, about a mile southward of the similar locality at Wolf-hill, I this summer remarked a few plants of E. umbrosum. In both places the plant grows almost exclusively on the side of the glen facing the north. The first English name applied to this species — the blunt-topped — is expressive, as distinguishing it from the comparatively spiral E. sylvaticum, the only British Equisetum to which it seems to me to bear even a general resemblance. — *Wm. Thompson; Donegal Square, Belfast, September* 10, 1843.

379. *Note on Osmunda regalis, near Swansea, Glamorganshire.* I may just adduce, as illustrating the changes caused by cultivation, and showing that even within the bounds of a garden, plants may yet continue *wild in their prison* till they are semi-domesticated, and that therefore the *vicinity*, even if a garden, may not be *always* good ground for doubt that a plant is indigenous there, — the fact of Osmunda regalis *now growing* within a nursery garden at Cwm Gwynne, about a mile and a half from Swansea, towards Gower. I went, in company with my friend Mr. James Buckman, of Cheltenham, to see a nursery garden, some acres in extent, at Cwm Gwynne, which had been enclosed from the waste about five years, and is now in a high state of cultivation, with all the usual stock of a nurseryman and market gardener. It was remarked to us by the lessee of the ground, that there was a boggy spot in the centre of the nursery, probably the best land, but which he had not yet brought under the spade. Happening to cross this place in our peregrinations, I thought I saw a variety

of Lastræa Filix-mas, not so common as many other ferns hereabouts, but when on the point of gathering it, to our surprise it proved to be the barren frond of Osmunda regalis. In the same boggy ground we noticed Pedicularis palustris, Viola palustris, &c. Now, of course, the existence of the Osmunda here will depend upon the piece of boggy ground being drained or not. Should it be neglected, as is not improbable, there being abundance of ground, the Osmunda and other bog-plants may remain for half a century, surrounded by cabbages, kidney-beans and onions. I should say that the fronds of Osmunda were all barren.—*Edwin Lees ; Ilfracombe, September* 12, 1843.

ART. CLXXII.—*Proceedings of Societies.*

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

Cork, Thursday, August 17, 1843. *Section B.—Chemistry and Mineralogy.* 'On the Influence of Light on the Growth of Plants,' by Mr. R. Hunt.—The peculiar influence exerted upon the germination of seeds and the growth of the young plants by coloured light, has been for some years the subject of the author's investigations. The results show the surprising powers exerted by the more luminous rays in preventing germination, and in destroying the healthful vigour of the young plant. Plants, when made to grow under the influence of the red rays, bend from the light as something to be avoided; while the blue or chemical rays are efficaceous in quickening the growth of plants. Since the publication of the last Report, the author has tried plants of a great variety of kinds, and the same effects have been produced. It has, however, been found, that although blue light accelerates germination, and gives a healthful vigour to the young plant, its stimulating influences are too great to ensure a perfect growth. The strength of the plant appears to be expended in the production of a beautiful deep green foliage; and it is only by checking this tendency, by the substitution of a yellow for a blue light, that the plant can be brought into its flowering and seeding state. The etiolating influence of the green rays was observed upon, as well as the power which plants possessed of sending out shoots of a great length in search of that light which is essential to their vigour.

Section D.—Zoology and Botany. Dr. Lankester read a paper from Mr. Robert Milliken, on a supposed anomaly in the fructification of the violet.

Mr. Babington said that the author of the paper had described the appearances correctly, but had come to a wrong conclusion. The fact was, that in Viola some flowers were later than others in appearing, and that the later ones were generally imperfect, not having any corolla. The later flowers appearing without petals had misled Mr. Milliken to the supposition that these produced their fruit as the result of the flowering of the first flowers. Prof. E. Forbes stated that the absence of petals was a permanent state of some of the species of violet.

Mr. Mackay exhibited specimens of the Irish Saxifrages. He called attention to the species resembling the London Pride (*Saxifraga umbrosa*), and with the specimens of the species he also exhibited several varieties of *S. Geum*, *S. hirsuta*, *S. h. polita*, &c. Mr. Babington remarked that Saxifraga was a difficult genus to study. There were many specimens on the table, which, if they came from different countries, would be naturally described as species, but which, as they were all gathered in Ireland, he had no hesitation in calling varieties. It was no proof that a plant was a species because it remained the same in cultivation for a great length of time, for many varieties did that. He had paid great attention to the Saxifrages, and of those belonging to the London Pride tribe, he believed that only *S. umbrosa*, *elegans*, *Geum*, and *hirsuta*, were species. The variety, *S. u.* of Mr. Mackay, was not the London Pride of the English gardens, which was identical with the London Pride of the Pyrenees. Prof. Forbes said, that the difference between botanists, with regard to species and varieties, could only be reconciled by ascertaining from each writer an estimate of the value he attached to particular characters. For the want of this there was much confusion even in Botany, but the evil was much greater in Zoology. The vague manner in which the characters of animals were drawn up by British zoologists, was a constant cause of complaint among continental naturalists.

The Rev. W. Hincks then called attention to two living specimens of Neottia gemmipara of Smith. This very rare plant had been discovered by Mr. J. Drummond in a salt marsh near Castleton, Bearhaven, in the county of Cork, in 1810. From an imperfect specimen, Sir J. E. Smith had described and figured it, and it had not been seen again till 1841, when it was re-found by Dr. Sharkey. Only one specimen was again obtained, and it was with difficulty identified with the original specimen in the Linnean Herbarium in London. Dr. Wood and Dr. Harvey had, during the past week, both gathered living specimens, which were now on the table. The original plant was not a Neottia, as had been supposed by Smith, but was now referred to Spiranthes. Mr. Babington stated, that he had carefully examined the plant on the table, and believed that is was a genuine Spiranthes. It was a matter of great interest, as probably this plant was one of the rarest in the world. There was no record of its having been found anywhere but in the locality from whence these specimens were brought. Mr. Hincks stated, that among some Californian plants received in London, had been found what appeared to be a Spiranthes gemmipara.

Dr. Allman exhibited specimens of a Linaria which he had gathered in Ireland. He believed it to be a new species, and had described it at a meeting of the Royal Irish Academy. It had been supposed to be the Linaria Italica of Treviranus, which had also been found in England, but this plant differed in many respects from L. Italica. Mr. Babington thought the plant of Dr. Allman differed from the English L. Italica. Should this Linaria be a new species, it will probably be new to the European Flora. Dr. Allman stated that botanists in London had pronounced his plant a hybrid, and Mr. Mackay concurred in this opinion. Dr. Allman then exhibited specimens of the very rare Trichomanes speciosum, and also of one discovered by Mr. Andrews of Dublin, which differed from it in many points, and which might probably turn out a new species. The principal features of difference that this fern presented were, the possession of bipinnate fronds, long bristles, and the triangular form of its fronds; in all these points it differed from T. speciosum. Mr. Mackay had cultivated the plant in question since Mr. Andrews discovered it, and it was his conviction that it was a new species.

Friday, August 18. *Section E.—Medical Science.* Dr. Pickells read a paper 'On the deleterious effects of Œnanthe Crocata.' — This plant, he observed, was known to be one of the [most] virulent poisons of the indigenous British Flora, but was stated to be very rare in Great Britain by Dr. Smith, in the letter-press of Sowerby's 'English Botany;' this was by no means true as regarded Ireland, particularly in Cork, and other southern counties, in which it grows in great abundance. Dr. Pickells collected nearly thirty cases of death by eating the root, the quantity in one instance not exceeding "the top of the finger;" he described the symptoms as exhibited in those cases,—insensibility, convulsions, locked jaw, delirium and insanity; and pointed out the proper mode of treating such cases, by detailing several which were cured by the exhibition of strong emetics, diffusible stimulants, enemata, &c. He concluded by making some observations on the poisons used by the ancients in judicial executions; he thought this might have been the plant used to destroy Socrates, and not the Conium maculatum of modern Botany; and from the symptom of insanity, he thought that this was the plant designated as the "insane root" by the poet. This plant Dr. Pickells stated to be equally injurious to black cattle and horses, as to man; he believed there was no direct antidote known; melted butter was given in some of the cases which recovered, and is popularly deemed a preservative against its effects. The root is frequently used as a discutient external application to tumours, and many of the accidents have occurred by eating it, when gathered for this purpose.—*From the Report in the Athenæum of Saturday, August* 26, 1843.

BOTANICAL SOCIETY OF LONDON.

September 1, 1843.—J. E. Gray, Esq., F.R.S. &c., in the chair. Dr. Wood, of Cork, presented a specimen of Neottia gemmipara, found in Ireland; * and British plants had been received from Mr. E. Doubleday, the Rev. A. Bloxam and Miss Worsley. Dr. Thomas Taylor presented the following four species of Jungermannia, new to the British Flora:—Jungermannia reclusa, (*Taylor, MS.*), J. germana (*Taylor, MS.*), J. fragilifolia (*Taylor, MS.*), and J. riparia (*Taylor, MS.*)

Read,—"Observations on some Varieties of Hypna, and on a new species of Lichen," by Dr. Thomas Taylor. Local collections of Cryptogamic plants are instructive in two ways, by contributing to our knowledge of the geographical distribution of the species, and by pointing out the directions which the characters of the varieties take when acted on by diversity of circumstances of external agencies. The cryptogamic collection of Dr. G. Watson, from the vicinity of Philadelphia, presented to the Botanical Society of London, elucidate in some particulars the foregoing remark; not however to a great extent, as the collector seems to have satisfied himself with gathering the largest and most prominent species, and to have omitted or overlooked the minuter and more inconspicuous kinds. Yet what has been collected is far from being destitute of interest and value.

Thus he has remitted to London a great profusion of Neckera cladorrhizans (*Hed.*) Now this moss was first described from Swiss specimens by Hedwig; afterwards it was sent to this country from Nepal by Dr. Wallich, and from New York by Dr. Torrey; finally we have it in the present collection from Philadelphia.

In Great Britain or Ireland, so fertile in mosses, it is totally unknown. We may therefore conclude that this species is altogether continental; although for the present we are unacquainted with those laws that deny to it an insular locality.

We have Hypnum salebrosum (*Hoffm.*) by its smaller size imposing upon us the form of a new species; but although the branches are more compressed and shorter, the leaves somewhat narrower, the pedicels more slender, and the capsules soon turning black, yet in all essential characters it entirely agrees with our British species.

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* See p. 750.

Hypnum plumosum, (L.), with us assumes diversified forms, among which a remarkable one collected by the late Miss Hutchins, at Glengariff, has all the leaves decidedly secund. The variety gathered by Dr. Watson, has the upper leaves alone heteromallous; but then its more erect and longer capsules, and the less concave but substriated leaves, claim the adjustment of the balance between species and variety by a practised hand. Dr. Taylor considered it less hazardous for the present, to leave it in the latter rank. But the impatient may say, when then are we to expect the means of exactly deciding? The answer is, perhaps not until some muscologist enjoys the privilege of seeing both growing in their native localities. For there is much value in the character taken from the habit of a plant. Many modern elevations of varieties to the rank of species have been first suggested by the silent appeal of the look of the growing individuals. In Dr. Watson's state of Hypnum rutabulum (L.), a mark hitherto considered essential to the species seems to be vanishing; the pedicels exhibit scarcely any appearance of roughness immediately below the capsules: in all other particulars the Philadelphian and European mosses coincide. But Mr. Wilson, whose observations on this tribe are always as original as acute, had long since taught Dr. T. that the scabrous state of the pedicel in this species is liable to great variation; insomuch that he seems disposed to doubt whether Hypnum vagans of Hooker, in Drummond's 'Musci Americana,' separated principally on account of the smoothness of the fruitstalks, be really distinct from Hypnum rutabulum, (L.)

Among the very few lichens sent by Dr. Watson, is a species of Cœnomyce, which may be considered new, and is called Cœnomyce foliacea. Its specific character may be thus given.—"Podetia two inches high, loosely cæspitose, dichotomously branched, the ultimate branches subulate, and tipped with brown; the buds in flattened granular pale green elevations of the cuticle, soon expanding into flat lobes, which are subpinnately branched and crenate, pale glaucous above, snow-white beneath, unaltered by moisture. There are no apothecia present."

The generic name is that of Acharius, which perhaps should not be abandoned but upon the clearest necessity. The modern subdivision of the genus into Cladonia and Scyphophorus appears attended with no advantage, while the species of these two tribes are, by the confession of the adopters themselves, joined by links that appear inseparable from either set. Indeed, on this question, the present plant is quite in point, having all the habit of Cœnomyce Sparassa (*Ach.*), (Scyphophorus of *Fée* and *DeCand.*), with the attenuated and subulate branches of Cladonia of the same authors.

The buds of lichens have not received the consideration from botanists which their importance merits. Hitherto the characters have been drawn from the thallus or from the apothecia alone: but the buds by which, for the most part, these plants are multiplied, and which, if watched during development, present most remarkable features, should be hailed as a new and welcome element for specific distinctions.

In Cœnomyce Sparassa (*Ach.*) the buds originate in coarse white granules, thickly set, and rising at once above the surface of the podetia; in our plant they are flat, scarcely eminent above the cuticle of the podetia, pale glaucous green from the beginning, and not so densely crowded, nor do they expand into lobes so linear. Another character may be taken from the branches of the podetia, which in the former are nearly parallel and of equal thickness, except at the very summit, while in Cœnomyce foliacea they are more gradually acuminated and divaricated above.—*G. E. D.*